



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

jm

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,731	01/17/2002	Shiquan Tao	2343-133-27	2499
7590	08/03/2004		EXAMINER	
Supervisor, Patent Prosecution Services PIPER MARBURY RUDNICK & WOLFE LLP 1200 Nineteenth Street, N.W. Washington, DC 20036-2412			MOONEY, MICHAEL P	
			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 08/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/046,731	TAO ET AL.
Examiner	Art Unit 287X83	
Michael P. Mooney		

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is **FINAL**.                                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,2,4-6,8,16,20,23 and 24 is/are rejected.
- 7) Claim(s) 3,7,9-15,17-19,21,22 and 25-49 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____.
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>8/26/03, 6/6/02</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-2, 4, 6, 16 are rejected under 35 U.S.C. 102b as being anticipated by Savant (6158245).**

Savant teaches a method for making a porous sol-gel fiber (col. 6 lines 49-57), the method comprising steps of: hydrolyzing a silicate ester with water using a catalyst to form a hydrolyzed solution (fig. 2; col. 7 lines 39-56); transferring the hydrolyzed solution into the cavity of a mold (fig. 2; col. 8 lines 1-5); allowing the hydrolyzed solution to gelatinize to form a sol-gel fiber; removing the sol-gel fiber from the mold (fig. 2; col. 8 lines 1-21); and drying the sol-gel fiber (fig. 2; col. 8 lines 22-31).

Thus claims 1, 16 are met.

Savant teaches wherein the silicate ester is tetramethyl orthosilicate or tetraethyl orthosilicate (col. 7 lines 14-16 & lines 45-50). Thus claim 2 is met.

Savant teaches wherein the catalyst is a mineral acid catalyst (col. 7 lines 45-55). Thus claim 4 is met.

Savant teaches wherein the hydrolyzed solution is allowed to gelatinize for at least two days. (fig. 2; col. 8 lines 1-10). Thus claim 6 is met.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 5, 8, 20, 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Savant (6158245).**

Savant teaches a method for making a porous sol-gel fiber (col. 6 lines 49-57), the method comprising steps of: hydrolyzing a silicate ester with water using a catalyst to form a hydrolyzed solution (fig. 2; col. 7 lines 39-56); transferring the hydrolyzed solution into the cavity of a mold (fig. 2; col. 8 lines 1-5); allowing the hydrolyzed solution to gelatinize to form a sol-gel fiber; removing the sol-gel fiber from the mold (fig. 2; col. 8 lines 1-21); and drying the sol-gel fiber (fig. 2; col. 8 lines 22-31).

Although Savant does not explicitly state the mold cavity is a "tubular cavity", Savant does teach casting fibers (col. 6 lines 50-56; col. 8 lines 1-3) via a mold. It would have been obvious to one of ordinary skill in the art to state the mold cavity is a "tubular cavity" because it is notoriously well known (NWK) that a fiber has tubular shape and that a tubular mold is used to create a tubular shape.

Thus claim 5 is rejected.

Although Savant does not explicitly state "allowing the sol-gel fiber to air dry" it would have been obvious to do so because it is NWK that some air drying occurs in drying procedures such as those disclosed at Savant col. 7 line 55 to col. 8 line 30. Thus claim 8 is rejected.

Savant teaches hydrolyzing a silicate ester with water using a catalyst to form a hydrolyzed solution; transferring the hydrolyzed solution into the cavity of a mold (fig. 2; col. 7 lines 39-56; col. 6 lines 50-56; col. 8 lines 1-3); allowing the hydrolyzed solution to gelatinize to form a sol-gel fiber (col. 6 lines 49-57); removing the sol-gel fiber from the mold (col. 8 lines 15-20); drying the sol-gel fiber (col. 8 lines 15-31).

Although Savant does not explicitly state "positioning the sol-gel fiber between a light source and a light detector" it would have been obvious to do so because it is NWK to test a fiber by positioning the sol-gel fiber between a light source and a light detector for the purpose of checking the light transmission quality of the fiber.

Thus claim 20 is rejected.

Although Savant does not explicitly state "wherein the diameter of the air dried sol-gel fiber is about 600 .mu.m or less" it would have been obvious to do so because it

is NWK for the diameter of a fiber to be about 600 .mu.m or less for the purpose of use in optical devices.

Thus claim 23 is rejected.

Although Savant does not explicitly state "wherein the length of the air dried sol-gel fiber is at least 1 mm" it would have been obvious to do so because it is NWK for the length of a fiber to be at least 1 mm for the purpose of use in optical devices.

Thus claim 24 is rejected.

#### ***Allowable Subject Matter***

Claims 3, 7, 9-15, 17-19, 21-22, 25-49 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art, either alone or in combination, does not disclose or render obvious wherein the volume ratio of the silicate ester to water is 2 or less in combination with the rest of claim 3.

The prior art, either alone or in combination, does not disclose or render obvious wherein the sol-gel fiber is removed from the mold by injecting a fluid into the mold in combination with the rest of claim 7.

The prior art, either alone or in combination, does not disclose or render obvious further comprising a step of incorporating a sensing material into the sol-gel fiber in combination with the rest of claim 9.

The prior art, either alone or in combination, does not disclose or render obvious further comprising a step of incorporating a sensing material into the sol-gel fiber in combination with the rest of claim 21.

The prior art, either alone or in combination, does not disclose or render obvious wherein the sensing material is optically changeable in the presence of moisture or ammonia in combination with the rest of claim 22.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Mooney whose telephone number is 571-272-2422. The examiner can normally be reached during weekdays, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1562.

  
Michael P. Mooney  
Examiner  
Art Unit 2877

FGF/mpm  
7/26/04

  
Frank G. Font  
Supervisory Patent Examiner  
Art Unit 2877